



Bicycle and Pedestrian Counts in the Buffalo-Niagara Region: 2019

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GObike

PRESENTED BY INDEPENDENT HEALTH

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Executive Summary

Regular bicycle and pedestrian counts are crucial transportation data. In street design considerations, if you're not counted, you don't count.

Counting bicyclists and pedestrians allows communities to understand where people are currently walking and biking, and where they are avoiding. Conducting counts allows biking and walking pattern changes to emerge and demonstrate how street design influences bicycle and pedestrian volumes. Data enables informed conversations between community members, advocates, and elected officials.

While scattered bicycle and pedestrian counts currently exist in the Buffalo-Niagara region, there is no regular count program. To fill this gap, in 2019, GObike organized a volunteer bicycle and pedestrian counting program using National Bicycle and Pedestrian Documentation Project count methodology. Volunteers dispersed across the region to assigned locations, and, following national methodology, counted people biking and walking on sidewalks, streets, and trails.

Thanks to our volunteers, we have first-year estimates (baseline) for the volume of people walking and biking each day at 40 locations around the region, from South Buffalo to Lewiston.

According to our data:

- The most popular biking spots are the Shoreline Trail (Niawanda Park), LaSalle Park, Elmwood Avenue, and the Tonawanda Rail Trail.
- The greatest pedestrian volumes were observed on Elmwood Avenue (North of Breckenridge), Allen Street (East of Mariner Street), and Bidwell Parkway.
- Many more men than women bike. On average, women make up just 22% of the average observed bicycle traffic. In comparison, we recorded an average of 45% observed female pedestrians.
- Some existing bike lanes aren't working so well. On South Park Avenue and Fillmore Avenue, which both have dedicated bicycle lanes, more than 60% of bicyclists observed were riding on the sidewalk.
- Wrong-way riding is common on some streets, such as Broadway and South Park avenues. Either people don't know they should be riding with traffic or they feel safer riding towards traffic.

This report is the first step in building a robust system of regional bicycle and pedestrian counting and allows us to talk to community members, agency partners, and elected officials about improving comfort and safety for people biking and walking. We can ask questions such as: Why aren't more women riding bikes? Why are so many people riding on the sidewalk in some locations? How can we use our data to make this region safer for all road users? By counting again in 2020, we can start to answer these questions, build a bigger data pool, and make the case for installed counters to collect continuous, year-round data.

1. Background

Transportation agencies nationwide plan and implement comprehensive bicycle and pedestrian counting systems. In 2016, the Federal Highway Administration (FHWA) added, "Traffic Monitoring for Non-Motorized Traffic" to its Traffic Monitoring Guide, recommending that agencies include bicycle and pedestrian traffic in data programs.

Bicycle and pedestrian counts are crucial transportation data that allow communities to understand when and where people are walking and cycling. While the City of Buffalo has installed some automated bicycle counters using "puck" technology, and the Greater Buffalo Niagara Regional Transportation Council counts bicyclists and pedestrians at some signalized intersections as part of their traffic counting program, there is currently no regular regional bicycle or pedestrian counting program.

In an effort to fill this gap, in 2019, GObike organized a volunteer bicycle and pedestrian counting program using the methodology established by the National Bicycle and Pedestrian Documentation Project.

The objectives of the count program are to:

- Establish baseline bicycle and pedestrian behavioral data throughout the region;
- Track biking and walking behavior over time, including before and after bike and/or pedestrian infrastructure or complete streets projects are installed or removed;
- Evaluate changes in walking and biking on a seasonal and annual basis;
- Inform future street design projects;
- Better understand crash and safety data; and
- Support informed conversations with the community members and elected officials.

This report details the methodology and results of that count effort, along with an analysis of major trends and observations. This information is intended to provide a baseline for an annual volunteer count program, and to spark regional conversations about the importance of bicycle and pedestrian counts.

2. Count Methodology

We followed the protocol recommended by the National Bicycle and Pedestrian Documentation Project, developed over 10 years ago by Alta Planning and Design and the Institute of Transportation Engineers (ITE) Pedestrian and Bicycle Council. Complete information on this effort is available at bikepeddocumentation.org.

Other potential data sources such as Strava, personal smartphone health apps, bicycle share programs, and public security cameras are beyond the scope of this study but could be considered in the future as part of expanded non-motorized counting efforts.

The National Bicycle and Pedestrian Documentation Project methodology uses two-hour peak counts to estimate daily bicycle and pedestrian travel. Volunteers tally bicyclists and pedestrians on a spreadsheet to record non-motorized traffic crossing a designated screenline. Appendix A provides an overview of recorded data; Appendix C includes the counting sheet and example screenline. A screenline is an imaginary line on the ground that covers the entire public right-of-way, including the sidewalk or trail. Any time a person crosses the screenline, they are counted.

One advantage of manual counting is volunteers are able to collect additional data about the people biking and walking, including gender, sidewalk riding, wrong way riding, or presence of an assistive device other than a bicycle (stroller, scooter, skateboard, wheelchair, etc).

The nationwide bicycle and pedestrian count days in 2019 were held on September 10, 11, and 12 (Tuesday to Thursday) between the hours of 4 and 6 pm, and Saturday, September 14, from 12 to 2 pm. The weather during the count days is outlined in Table 1.

Table 1: Weather Data from Weather Underground Historical Data at Buffalo Niagara International Airport

Day	Cloud cover	High (F)	Low (F)	24 hour precipitation (inches)	Notes
Tues, Sept 10	Cloudy	81	53	0	N/A
Weds, Sept 11	Cloudy	80	67	1.15	No rain during count
Thurs, Sept 12	Cloudy	68	56	1.05	No rain during count; periods of light rain in the morning and afternoon
Sat, Sept 14	Partly cloudy partly sunny	70	64	0.34	No rain during count

According to the National Bicycle and Pedestrian Documentation Project, travel patterns on Tuesdays, Wednesdays, and Thursdays are not statistically significantly different, thus counts on those days are considered equivalent. Ideally, each site would be counted on two weekdays and two weekend days to minimize the effects of weather and other unforeseen circumstances. However, due to volunteer capacity, we prioritized obtaining one count at more locations over several counts at fewer locations. With 38 volunteers, we were able to count a total of 40 sites, including 20 trail locations, nine locations with existing bike lanes, and 11 locations with no exiting bike facility. We counted seven weekday sites twice, and 14 sites on both weekdays and weekends. As we grow the program in subsequent years, we aim to repeat counts as feasible, and to increase our coverage on weekends.

After the counts, volunteers submitted count forms to GObike, who tabulated the information by count site. We then extrapolated two-hour counts to calculate estimated daily traffic (EDT) using data from the National Bicycle and Pedestrian Documentation Project. It is important to extrapolate the data from two-hour counts to an “estimated daily traffic” number to make this information more understandable to the general public and to align the data with traffic engineers reporting mechanisms for motor vehicle traffic data (average annual *daily* traffic).

According to data from the National Bicycle and Pedestrian Documentation Project, based on counts across the country, in “long winter, short summer” climate zones, peak hour travel (4 to 6 pm in our region) accounts for 14% of daily non-motorized traffic on weekdays. On weekends, peak hour travel (12 to 2 pm) accounts for 17% of daily non-motorized travel. We used these percentages to extrapolate from two-hour counts to estimated daily traffic.

If we had a continuous bicycle counter in this region (counting 24 hours a day, 365 days a year), we could use local data for extrapolation purposes rather than the national data. We collected more than 48 hours of continuous counts on the Tonawanda Rail Trail, south of Sheridan Drive, on both weekdays and weekends using a camera. While this data provides an opportunity to compare national data to local data, we did not use it for extrapolation as it is only one location and only 48 hours, compared to the national data which was created using a very large data set. Additionally, the Tonawanda Rail Trail is a unique trail in this region, and continuous count data is needed in more locations to determine if it displays a pattern that is representative of other regional locations.

For an in-depth comparison of the Tonawanda Rail Trail data to national hourly data, see Appendix B.

3. Data Summary

Table 2 below outlines the full list of count sites along with EDT for bicyclists and pedestrians. Figures 1 through 4 show the count locations along with weekday and weekend EDT for bicycles and pedestrians, where available. Appendix A includes full data, including observed gender, percent children, sidewalk riding, and wrong way riding.

Table 2: Count Sites with Estimated Daily Traffic for Pedestrians and Bicycles

ID	Location	Where	Municipality	Existing bike facility	Bike EDT - weekday	Bike EDT - weekend	Ped EDT - weekday	Ped EDT - weekend
1	South Park Ave	N of Reading Ave	Buffalo	bike lane	164	165	600	335
2	Fuhrmann Boulevard	S of Ohio St	Buffalo	trail	21	229	21	24
3	Marine Dr	E of Commercial St	Buffalo	none	64		786	
4	Pearl St	N of W Seneca St	Buffalo	bike lane	186		1443	
5	LaSalle Park trail	N/W of Lakefront Blvd	Buffalo	trail	200	494	121	118
6	Prospect Ave	S of Carolina	Buffalo	none	86		457	
7	Porter Ave	E of DAR Dr	Buffalo	trail	64	559	436	547
8	Allen St	E of Mariner St	Buffalo	none	336		2332	
9	Linwood Ave	N of North St	Buffalo	bike lane, contraflow	393	212	571	506
10	Broadway	E of Gibson St	Buffalo	bike lane	207		443	
11	Fillmore Ave	N of Best St	Buffalo	bike lane	214	35	407	200
12	Jefferson Ave	N of E Ferry St	Buffalo	none	36	41	343	259
14	Richmond Ave	N of Utica St	Buffalo	bike lane	271		525	
15	Elmwood Ave	N of Breckenridge	Buffalo	none	493		2464	
16	Grant St	N of Lafayette Ave	Buffalo	none	308		1161	
17	Bidwell Pkwy	N of Potomac Ave	Buffalo	bike lanes	271	376	1807	600
18	Delaware Ave	N of Rumsey	Buffalo	bike lanes	271		236	
19	Lincoln Pkwy	Rose Garden	Buffalo	none	257		900	
20	Scajaquada Trail	Wegmans/Playground area	Buffalo	trail	179	235	429	100
21	Broderick Park	Robert Rich Way Bridge	Buffalo	trail	93		164	
22	William L Gaiter Pkwy	S of Kensington Ave	Buffalo	trail	21		21	
23	Bailey Ave	N of Kensington Ave	Buffalo	none	129		1357	
24	Tonawanda Rail Trail (CAMERA)	N of Sheridan Ave	Tonawanda	trail	348	484	78	153
25	Grand Island Bridge - south	River Road entrance - capture both north and south pathways	Tonawanda	trail	36	35	7	0
26	River Road & Shoreline Trail	S of Grand Island Bridge	Tonawanda	trail	193	153	21	18
27	GI W River Pkwy	S of Whitehaven	Grand Island	trail	193	165	39	47
28	Shoreline Trail	Niawanda Park bet Gibson and Wheeler St	Tonawanda	trail	579		1050	
29	E Niagara St + Trail	Bet Douglas St and Carney St	Tonawanda	trail	407		43	
31	NF State Park South	near Old Stone Chimney	Niagara Falls	trail	36		0	
32	Devil's Hole Gateway	S of Devil's Hole State Park Parking Area	Niagara Falls	trail	7		79	
33	N 2nd St, Lewiston	N of Oneida St	Lewiston	none	29		50	
34	William St	W of Pine St	Buffalo	bike lane	136		200	
35	Main St	S of Scajaquada Expy	Buffalo	none	200	118	414	200
36	Niagara Scenic Parkway Trail	N of Mohawk	Lewiston	trail	29		0	
37	Clarence bike path	Clarence Center	Clarence Center	trail	286		121	
38	Canalway Trail and Tonawanda	W of Creekside Assembly of God	Amherst	trail	100		50	
39	Strawn Ave Cheektowaga	~50 ft from trail entrance	Cheektowaga	trail	36		36	
40	Two Mile Creek Trail	S of Niagara St	Tonawanda	trail	36		157	
41	Main St	N of Virginia St	Buffalo	none	171		779	
42	Tonawanda Rail Trail	N of Englewood Ave	Tonawanda	trail	250	424	207	335

Figure 1: Weekday EDT for Bicyclists

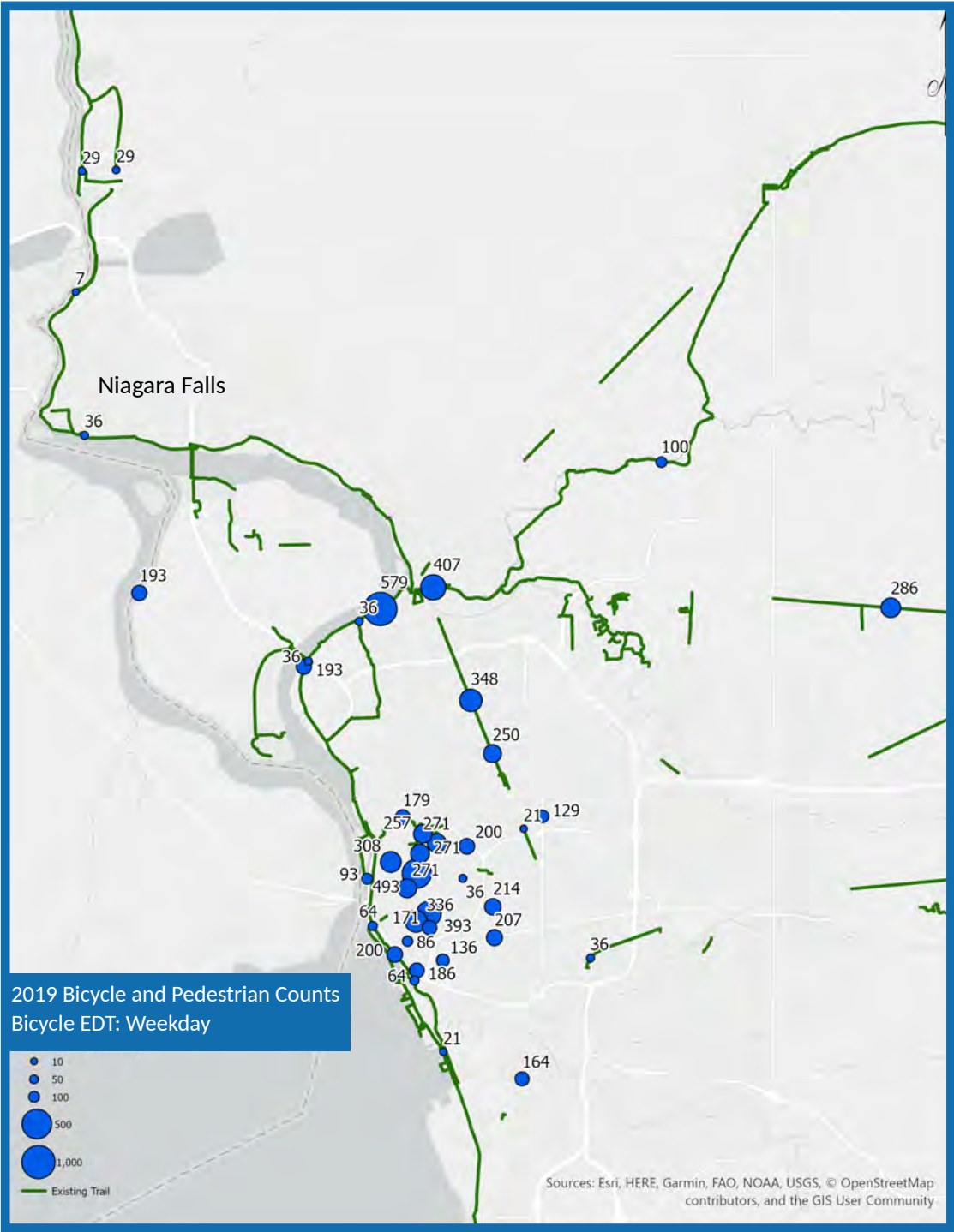
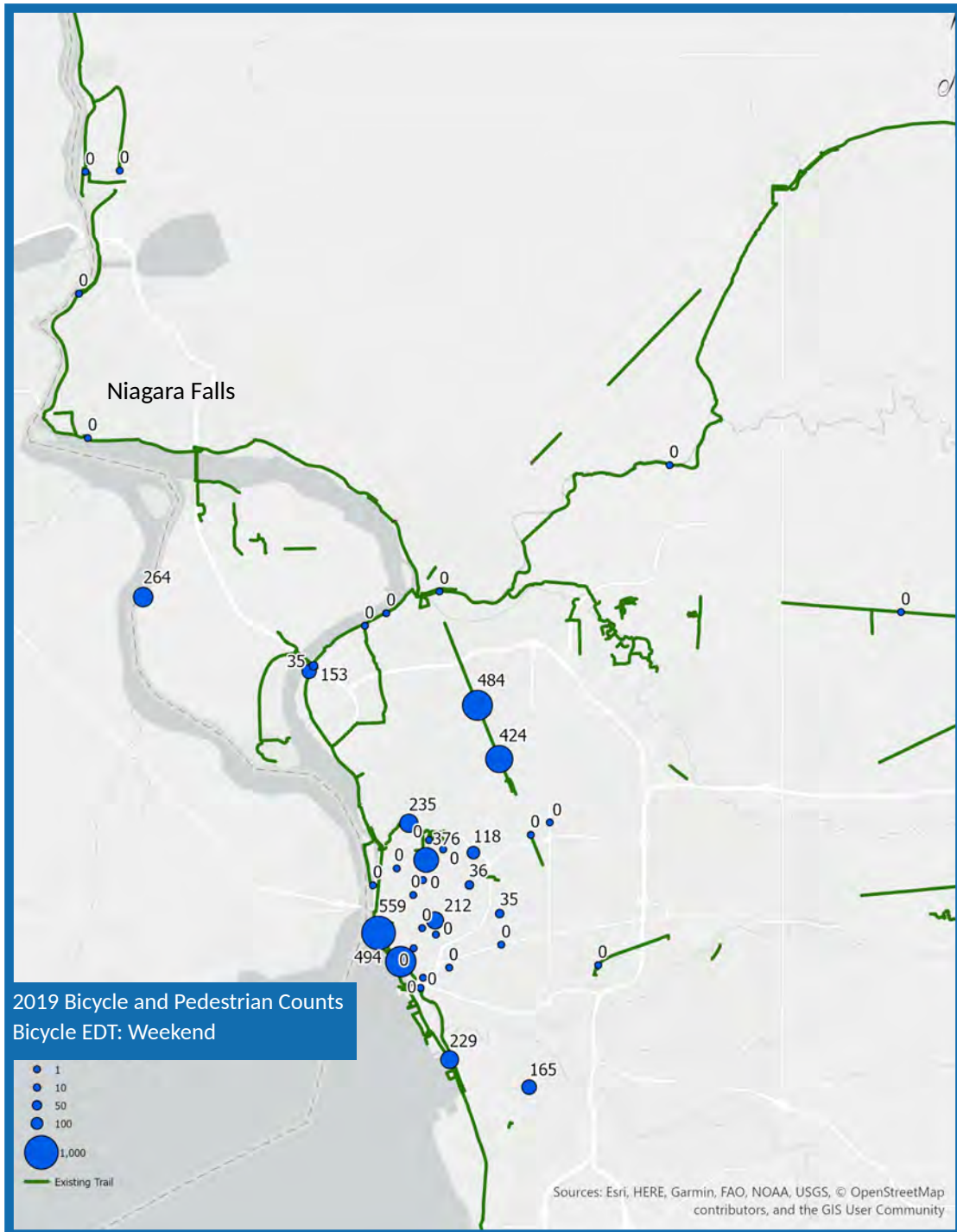


Figure 2: Weekend EDT for Bicyclists



Note: "0" indicates count was not conducted

Figure 3: Weekday EDT for Pedestrians

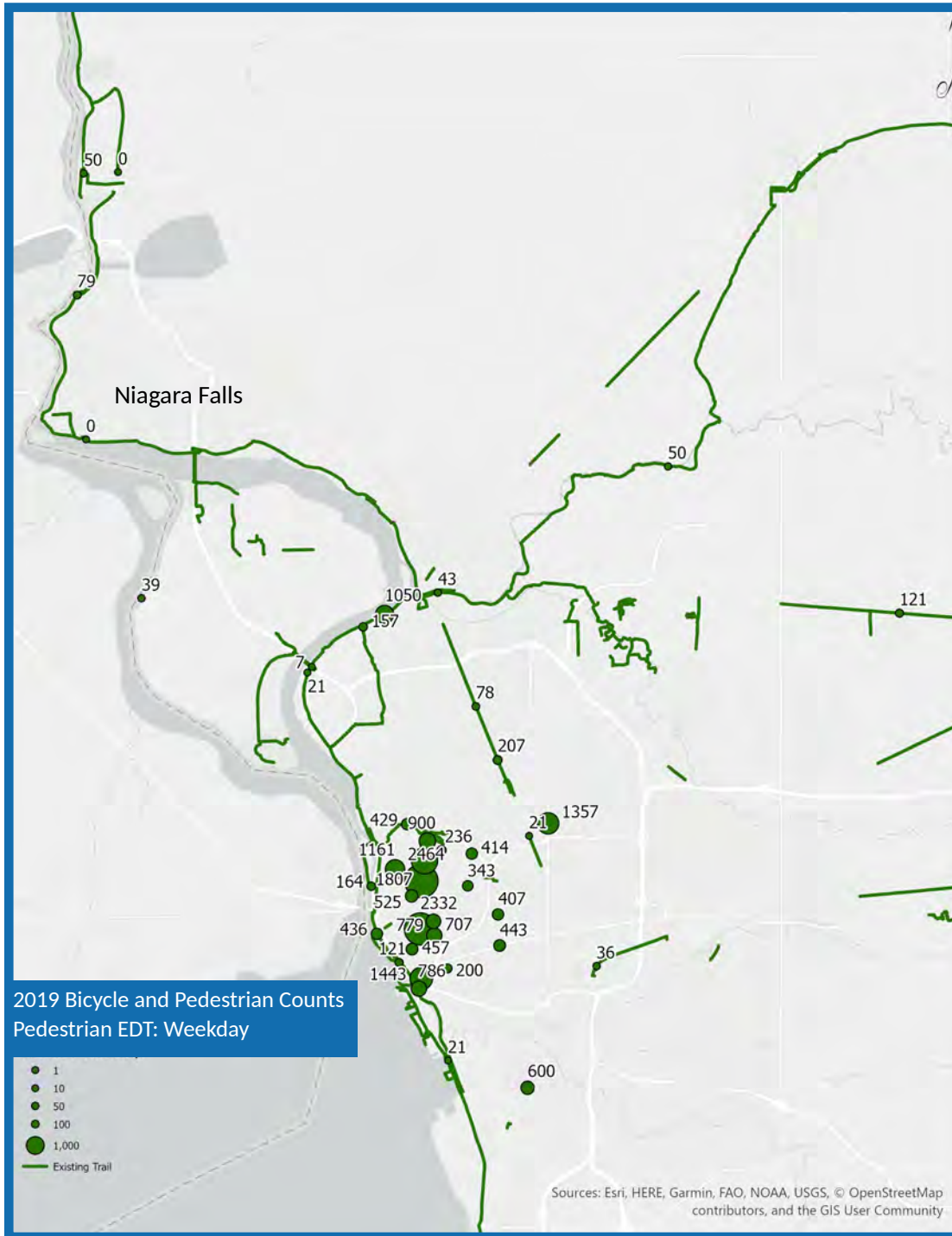
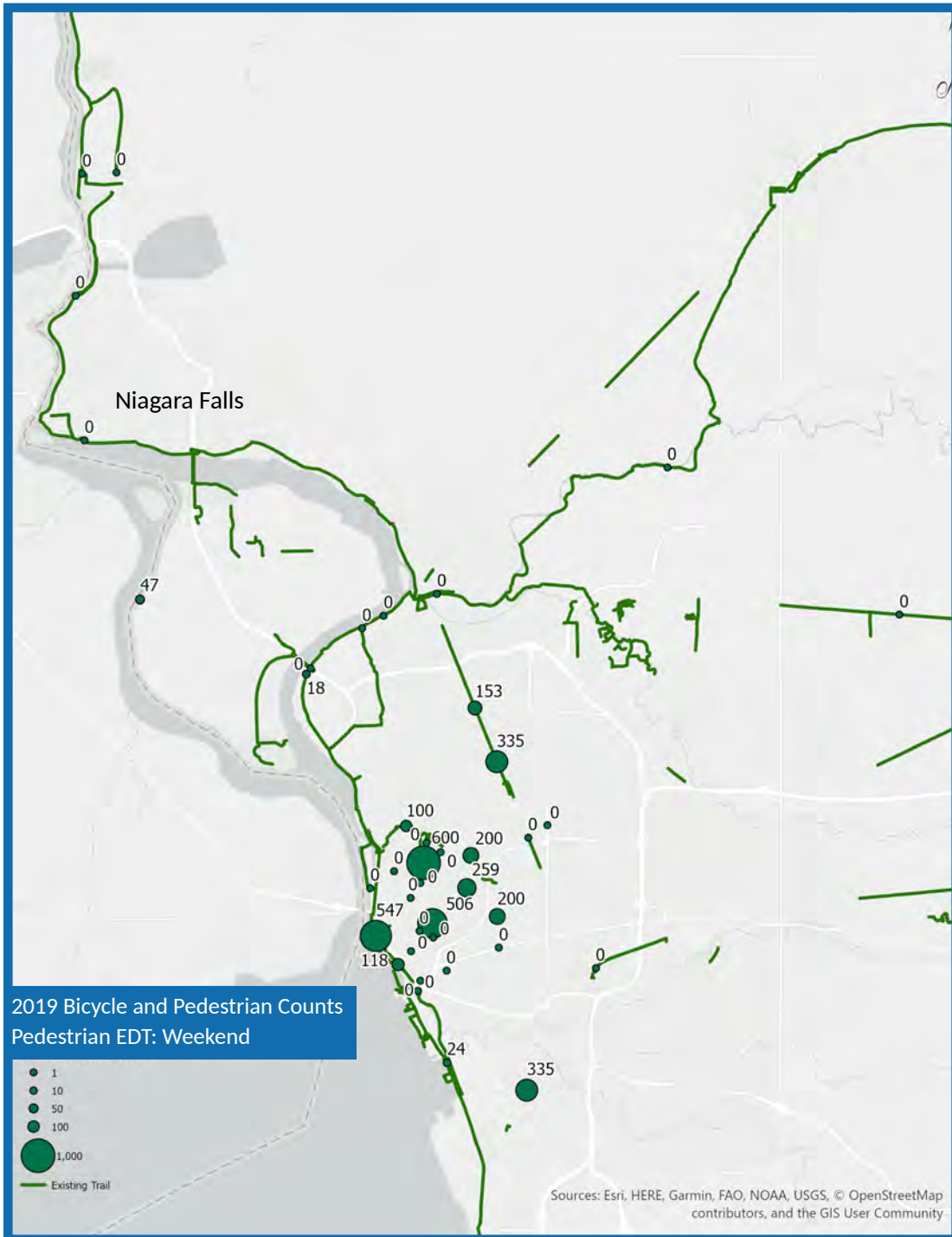


Figure 4: Weekend EDT for Pedestrians



Note: "0" indicates count was not conducted

4. Key Trends and Observations – Bicycle Counts

Outlined below are observed characteristics of sites with high and low volumes of recorded bicyclists, an estimation of bicycle facility use (recreational versus utilitarian), and observations related to gender split, wrong way riding, and sidewalk riding.

Characteristics of Higher Volume Sites

Bicycle counts help us understand *where* people are currently cycling, and analyzing the characteristics of high volume sites can help us understand *why*. Table 3 below outlines the sites with the highest recorded bicycle volumes (note: weekend and weekday counts are represented separately where we have data).

Table 3: Bike Count Sites with Highest Volumes

ID	Facility	Count Location	Existing bike facility	Weekend or weekday	Bike EDT
28	Shoreline Trail	Niawanda Park bet Gibson and Wheeler St	trail	weekday	579
7	Porter Ave	E of DAR Dr	trail	weekend	559
5	LaSalle Park trail	N/W of Lakefront Blvd	trail	weekend	494
15	Elmwood Ave	N of Breckenridge	none	weekday	493
24	Tonawanda Rail Trail (CAMERA)	N of Sheridan Ave	trail	weekend	484
42	Tonawanda Rail Trail	N of Englewood Ave	trail	weekend	424
29	E Niagara St + Trail	Bet Douglas St and Carney St	trail	weekday	407
9	Linwood Ave	N of North St	bike lane, contraflow bike lane	weekday	393
17	Bidwell Pkwy	N of Potomac Ave	bike lanes	weekend	376
24	Tonawanda Rail Trail (CAMERA)	N of Sheridan Ave	trail	weekday	348
8	Allen St	E of Mariner St	none	weekday	336
16	Grant St	N of Lafayette Ave	none	weekday	308

The highest volume sites that we counted generally fall within one of three categories:

1. High quality parks/rail trails

We recorded the greatest volume of bicycle counts on areas such as the Shoreline Trail, LaSalle Park trails, and Tonawanda Rail Trail. These facilities are highly scenic and completely separated from motor vehicle traffic.

2. Streets in areas with high residential density and mixed land use, including substantial commercial activity, regardless of bike facility

Elmwood Avenue, Grant Street, and Allen Street have a high level of bicycle activity. We attribute this to the fact that many people live, work, and shop in these neighborhoods, and want to take advantage of the convenience and affordability of bicycle transportation for short trips. Note that these streets do not have any bicycle facilities at this time.

3. Key bike connections to downtown Buffalo

Downtown Buffalo is a major commute destination for the region, which makes it a major destination for bike commuters. Streets that provide a key bike connection to downtown (or the vicinity), such as Linwood Avenue or Richmond Avenue, host relatively strong levels of bike activity.

Recreational versus Utilitarian Usage

Bike count data can help us understand whether a given location is more popular with people who are cycling to access a destination (utilitarian cycling), for recreation, or both. Based on protocol established by Miranda-Moreno et. al (2013),¹ if the ratio of average weekday traffic to average weekend traffic (WWI) is less than 1, and the ratio of the average morning traffic to average midday traffic is less than 1, the location tends towards recreational uses.

With our data, we were not able to analyze morning volumes compared to midday volumes but we did compare weekday versus weekend volumes. The 14 locations where we have both weekday and weekend data show a variety of different patterns.

Several trail locations (Fuhrmann Boulevard/Outer Harbor, LaSalle Park trails) currently function as strongly recreational, and a number of on-street facilities are strongly utilitarian (Linwood Avenue, Fillmore Avenue, Main Street). The rest of the sites fall somewhere in the middle, with South Park Avenue, Jefferson Avenue, and the Grand Island West River Parkway showing equal activity on weekdays and weekends.

¹ <https://trec.pdx.edu/sites/default/files/Miranda-Moreno2013Patterns.pdf>

Table 4: Recreational versus Utilitarian Use Classification

ID	Facility	Count Location	Bike EDT - weekday	Bike EDT - weekend	WWI	Classification
1	South Park Ave	N of Reading Ave	164	165	1.00	both
2	Fuhrmann Boulevard	S of Ohio St	21	229	0.09	recreational
5	LaSalle Park trail	N/W of Lakefront Blvd	200	494	0.40	recreational
7	Porter Ave	E of DAR Dr	64	559	0.12	recreational
9	Linwood Ave	N of North St	393	212	1.85	utilitarian
11	Fillmore Ave	N of Best St	214	35	6.12	utilitarian
12	Jefferson Ave	N of E Ferry St	36	41	0.87	both
17	Bidwell Pkwy	N of Potomac Ave	271	376	0.72	leans recreational
20	Scajaquada Trail	Wegmans/ Playground area	179	235	0.76	leans recreational
24	Tonawanda Rail Trail (CAMERA)	N of Sheridan Ave	348	484	0.72	leans recreational
25	Grand Island Bridge - south	River Road entrance	36	35	1.03	both
26	River Road & Shoreline Trail	S of Grand Island Bridge	193	153	1.26	leans utilitarian
27	GI W River Pkwy	S of Whitehaven	193	165	1.17	both
35	Main St	S of Scajaquada Expy	200	118	1.69	utilitarian

Gender Split

National data indicates that there is a gender gap in biking in the United States, with more men than women regularly riding a bike.² The size of this gender gap varies by geography. Our data show a significant gender gap evident here in the Buffalo-Niagara region, with women comprising an average of just 22% of the bicycle traffic.

There are a variety of reasons that women tend to bike less than men. On average, women have more childcare responsibilities, and need to do more trip chaining (e.g., stopping at the grocery store and the daycare on the way home from work). In general, women are

² 2009 National Household Travel Survey (NHTS)

more risk averse than men, and prefer trail facilities that are separate from motor vehicle traffic. Our data support these national trends, with the greatest percentage of women found on trail and park facilities including the LaSalle Park trails, Fuhrmann Boulevard (Outer Harbor), and the Tonawanda Rail Trail. Other sites in the top 10 have bike lanes, including Richmond Avenue, Linwood Avenue, and Bidwell Parkway.

Table 5: Top 10 Sites with Greatest Percentage of Women Cycling

ID	Facility	Count Location	Weekday/ end	Bike EDT	% female
7	Porter Ave	E of DAR Dr	weekend	559	47%
2	Fuhrmann Boulevard	S of Ohio St	weekend	229	44%
28	Shoreline Trail	Niawanda Park bet Gibson and Wheeler St	weekday	579	40%
5	LaSalle Park trail	N/W of Lakefront Blvd	weekday	200	39%
5	LaSalle Park trail	N/W of Lakefront Blvd	weekend	494	39%
14	Richmond Ave	N of Utica St	weekday	271	34%
42	Tonawanda Rail Trail	N of Englewood Ave	weekday	250	34%
14	Richmond Ave	N of Utica St	weekday	271	34%
9	Linwood Ave	N of North St	weekend	393	33%
17	Bidwell Pkwy	N of Potomac Ave	weekend	376	33%

Alternatively, we recorded zero women biking on South Park Avenue and Fillmore Avenue.

Table 6: Three Sites with Least Percentage of Women Cycling

ID	Facility	Count Location	Date	EDT	% female
35	Main St	S of Scajaquada Expy	weekday	200	14%
1	South Park Ave	N of Reading Ave	weekday	164	0%
11	Fillmore Ave	N of Best St	weekday	214	0%

Note that for this analysis, we excluded very low volume sites, recognizing that conclusions about gender split are limited with such a small sample size.

Sidewalk Riding

Sidewalk riding is an indication that people either don't feel safe riding in the road, or they are unaware that they are supposed to be riding in the road.

Our data shows high levels of sidewalk riding in some locations. Over half of the cyclists recorded riding on South Park, Fillmore, and Bailey avenues were on the sidewalk. Notably,

there are existing conventional bike lanes on both South Park and Fillmore avenues, but they are wide, straight corridors, and thus conducive to speeding.³

We saw little sidewalk riding on Richmond Avenue, Linwood Avenue, and Bidwell Parkway, which also have conventional bike lanes but evidently feel safer to people on bikes.

Table 7 shows the top 10 sites for sidewalk riding according to our two-hour counts. Table 8 shows five sites with the lowest rate of sidewalk riding. Note that for this analysis, we excluded trail locations.

Table 7: Sites with the Greatest Sidewalk Riding Observed

ID	Facility	Count Location	Existing bike facility	Bike EDT - weekday	% sidewalk riding (weekday)
1	South Park Ave	N of Reading Ave	bike lane	164	65%
11	Fillmore Ave	N of Best St	bike lane	214	63%
23	Bailey Ave	N of Kensington Ave	none	129	56%
18	Delaware Ave	N of Rumsey	bike lanes	271	47%
12	Jefferson Ave	N of E Ferry St	none	36	40%
15	Elmwood Ave	N of Breckenridge	none	493	39%
41	Main St	N of Virginia St	none	171	38%
16	Grant St	N of Lafayette Ave	none	308	34%
10	Broadway	E of Gibson St	bike lane	207	31%
35	Main St	S of Scajaquada Expy	none	200	29%

³ Daisa, James M & John B Peers. "[Narrow Residential Streets: Do They Really Slow Down Speeds?](#)" Presented at the Institute of Transportation Engineers 67th annual Meeting, Tampa, FL: 1997

Table 8: Sites with the Least Sidewalk Riding Observed

ID	Facility	Count Location	Existing bike facility	Bike EDT - weekday	% sidewalk riding (weekday)
9	Linwood Ave	N of North St	bike lane, contraflow bike lane	393	4%
17	Bidwell Pkwy	N of Potomac Ave	bike lanes	271	3%
3	Marine Dr	E of Commercial St	none	64	0%
4	Pearl St	N of W Seneca St	bike lane	186	0%
6	Prospect Ave	S of Carolina	none	86	0%

Wrong Way Riding

Wrong way riding is when someone rides facing traffic. Per New York State law, people on bicycles should ride in the same direction as traffic.⁴ Similar to sidewalk riding, wrong way riding is an indicator that people either don't know that they should be riding with traffic, or they feel safer riding facing traffic due to facility design or absence of a bike facility.

Wrong way riding is not as prevalent as sidewalk riding, although a number of streets had both high wrong way riding and sidewalk riding, including South Park Avenue, Grant Street, Main Street, Broadway Avenue, and Jefferson Avenue, as outlined in Table 9. We observed the greatest amount of wrong way riding on Prospect Avenue, likely because it is a key bike connection that is a one-way street.

⁴ https://www.dot.ny.gov/display/programs/bicycle/safety_laws/laws#1234

Table 9: Sites with the Greatest Observed Wrong Way Riding

ID	Facility	Count Location	Existing bike facility	Bike EDT - weekday	% wrong way riding (weekday)
6	Prospect Ave	S of Carolina	none	86	67%
10	Broadway	E of Gibson St	bike lane	207	45%
1	South Park Ave	N of Reading Ave	bike lane	164	39%
16	Grant St	N of Lafayette Ave	none	308	34%
35	Main St	S of Scajaquada Expy	none	200	21%
34	William St	W of Pine St	bike lane	136	21%
12	Jefferson Ave	N of E Ferry St	none	36	20%
8	Allen St	E of Mariner St	none	336	16%
23	Bailey Ave	N of Kensington Ave	none	129	6%
41	Main St	N of Virginia St	none	171	4%

Table 10 outlines the non-trail locations with the lowest percentage of wrong way riding. Note that Delaware Avenue (North of Rumsey) has few people riding the wrong way. This is likely due to almost half of people recorded biking were on the sidewalk (see Table 7).

Table 10: Locations with Least Observed Wrong Way Riding

ID	Facility	Count Location	Existing bike facility	Bike EDT - weekday	% wrong way riding (weekday)
18	Delaware Ave	N of Rumsey	bike lanes	271	3%
3	Marine Dr	E of Commercial St	none	64	0%
14	Richmond Ave	N of Utica St	bike lane	271	0%
19	Lincoln Pkwy	Rose Garden	none	257	0%
33	N 2nd St, Lewiston	N of Oneida St	none	29	0%

5. Key Trends and Observations – Pedestrian Counts

Outlined below are observed characteristics of sites with high and low volumes of recorded pedestrians and gender split.

Characteristics of Higher Volume Sites

The locations with the highest pedestrian volumes were the walkable commercial districts, including Elmwood Avenue, Allen Street, Pearl Street, Grant Street, and Bailey Avenue, and park settings including Bidwell Parkway and the Shoreline Trail. The lowest pedestrian volumes we saw were in the areas far from housing or commercial activity.

Table 11: Locations with Greatest Observed Pedestrian Volumes

ID	Facility	Count Location	Ped EDT - weekday	Ped EDT - weekend
15	Elmwood Ave	N of Breckenridge	2464	
8	Allen St	E of Mariner St	2332	
17	Bidwell Pkwy	N of Potomac Ave	1807	600
4	Pearl St	N of W Seneca St	1443	
23	Bailey Ave	N of Kensington Ave	1357	
16	Grant St	N of Lafayette Ave	1161	
28	Shoreline Trail	Niawanda Park bet Gibson and Wheeler St	1050	
19	Lincoln Pkwy	Rose Garden	900	
3	Marine Dr	E of Commercial St	786	
41	Main St	N of Virginia St	779	

Table 12: Locations with Least Observed Pedestrian Volumes

ID	Facility	Count Location	Ped EDT - weekday	Ped EDT - weekend
26	River Road & Shoreline Trail	S of Grand Island Bridge	21	18
2	Fuhrmann Boulevard	S of Ohio St	21	24
25	Grand Island Bridge - south	River Road entrance - capture both north and south pathways	7	0
31	NF State Park South	near Old Stone Chimney	0	
36	Niagara Scenic Parkway Trail	N of Mohawk	0	

Gender Split

We observed significantly less of a gender gap among pedestrians than among bicyclists, with an average of 45% of pedestrians being female (compared to 22% among bicyclists). In 14 locations, at least half of observed pedestrians were female, as demonstrated in Table 13.

Table 13: Sites with 50 Percent or Greater Female Pedestrian Volumes Observed

ID	Location	Where	% female	Day of Week
20	Scajaquada Trail	Wegmans/Playground area	63%	weekday
42	Tonawanda Rail Trail	N of Englewood Ave	63%	weekend
42	Tonawanda Rail Trail	N of Englewood Ave	62%	weekday
4	Pearl St	N of W Seneca St	61%	weekday
17	Bidwell Pkwy	N of Potomac Ave	61%	weekday
10	Broadway	E of Gibson St	60%	weekday
17	Bidwell Pkwy	N of Potomac Ave	59%	weekend
28	Shoreline Trail	Niawanda Park bet Gibson and Wheeler St	57%	weekday
15	Elmwood Ave	N of Breckenridge	55%	weekday
9	Linwood Ave	N of North St	54%	weekday
16	Grant St	N of Lafayette Ave	54%	weekday
19	Lincoln Pkwy	Rose Garden	51%	weekday
15	Elmwood Ave	N of Breckenridge	50%	weekday
5	LaSalle Park trail	N/W of Lakefront Blvd	50%	weekend

William St had the smallest percentage of women, at 14%, with the locations outlined in Table 14 also hosting the fewest female pedestrians.

Table 14: Sites with Least Female Pedestrian Volumes Observed

ID	Location	Where	% female	Day of Week
35	Main St	S of Scajaquada Expy	34%	weekday
21	Broderick Park	Robert Rich Way Bridge	30%	weekday
1	South Park Ave	N of Reading Ave	30%	weekday
12	Jefferson Ave	N of E Ferry St	30%	weekend
34	William St	W of Pine St	14%	weekday

Note for this analysis, we excluded very low volume sites, recognizing that conclusions about gender split are limited with such a small sample size.

6. Conclusion

This report provides an initial baseline to compare future data. As additional counts are conducted, we will be able to start answering important questions— how and where are bicycle and pedestrian volumes increasing throughout the region? How does GObike encouragement and education affect bicycle ridership? How do infrastructure changes affect active transportation behavior?

In the interim, our next steps are to:

- Share this data with agency and community partners. Our goal is to spark regional conversations about biking and walking and to support data driven decision making.
- Work with local and regional partners to install permanent, continuous count stations that count bikes and/or pedestrians 24/7/365. There are a variety of viable products that could provide us with valuable count data and would enable us to more accurately extrapolate volunteer bike counts.
- Acquire portable bicycle and/or pedestrian count devices to supplement permanent count stations and volunteer counts
- Continue this volunteer program on an annual basis, each September.

Appendix A: Bicycle and Pedestrian Count Tables

ID	Location	Where	Municipality	Existing bike facility	Year	Bike EDT - (week-day)	Bike EDT (week-end)	% female (week-day)	% child (week-day)	% sidewalk riding (week-day)	% wrong way riding (week-day)	Ped EDT (week-day)	Ped EDT (week-end)
1	South Park Ave	N of Reading Ave	Buffalo	bike lane	2019	164	165	0%	17%	65%	39%	600	335
2	Fuhrmann Boulevard	S of Ohio St	Buffalo	trail	2019	21	229					21	24
3	Marine Dr	E of Commercial St	Buffalo	none	2019	64				0%	0%	786	
4	Pearl St	N of W Seneca St	Buffalo	bike lane	2019	186		27%	0%	0%	4%	1443	
5	LaSalle Park trail	N/W of Lakefront Blvd	Buffalo	trail	2019	200	494	39%	0%			121	118
6	Prospect Ave	S of Carolina	Buffalo	none	2019	86				0%	67%	457	
7	Porter Ave	E of DAR Dr	Buffalo	trail	2019	64	559	11%	0%			436	547
8	Allen St	E of Mariner St	Buffalo	none	2019	336		19%	0%	27%	16%	2332	
9	Linwood Ave	N of North St	Buffalo	bike lane, contraflow bike lane	2019	393	212	33%	3%	4%	3%	571	506
10	Broadway	E of Gibson St	Buffalo	bike lane	2019	207		24%	21%	31%	45%	443	
11	Fillmore Ave	N of Best St	Buffalo	bike lane	2019	214	35	0%	0%	63%	3%	407	200
12	Jefferson Ave	N of E Ferry St	Buffalo	none	2019	36	41			40%	20%	343	259
14	Richmond Ave	N of Utica St	Buffalo	bike lane	2019	271		34%	6%	5%	0%	525	
15	Elmwood Ave	N of Breckenridge	Buffalo	none	2019	493		20%	7%	39%	3%	2464	
16	Grant St	N of Lafayette Ave	Buffalo	none	2019	308		21%	5%	34%	34%	1161	

ID	Location	Where	Municipality	Existing bike facility	Year	Bike EDT - (week-day)	Bike EDT (week-end)	% female (week-day)	% child (week-day)	% sidewalk riding (week-day)	% wrong way riding (week-day)	Ped EDT (week-day)	Ped EDT (week-end)
17	Bidwell Pkwy	N of Potomac Ave	Buffalo	bike lanes	2019	271	376	21%	13%	3%	3%	1807	600
18	Delaware Ave	N of Rumsey	Buffalo	bike lanes	2019	271		21%	3%	47%	3%	236	
19	Lincoln Pkwy	Rose Garden	Buffalo	none	2019	257		17%	3%	11%	0%	900	
20	Scajaquada Trail	Wegmans/ Playground area	Buffalo	trail	2019	179	235	24%	20%			429	100
21	Broderick Park	Robert Rich Way Bridge	Buffalo	trail	2019	93				85%	8%	164	
22	William L Gaiter Pkwy	S of Kensington Ave	Buffalo	trail	2019	21				33%	33%	21	
23	Bailey Ave	N of Kensington Ave	Buffalo	none	2019	129				56%	6%	1357	
24	Tonawanda Rail Trail (CAMERA)	N of Sheridan Ave	Tonawanda	trail	2019	348	484					78	153
25	Grand Island Bridge - south	River Road entrance - capture both north and south pathways	Tonawanda	trail	2019	36	35					7	0
26	River Road & Shoreline Trail	S of Grand Island Bridge	Tonawanda	trail	2019	193	153	15%	7%			21	18
27	GI W River Pkwy	S of Whitehaven	Grand Island	trail	2019	193	165					39	47
28	Shoreline Trail	Niawanda Park bet Gibson and Wheeler St	Tonawanda	trail	2019	579		40%	7%	2%	0%	1050	
29	E Niagara St + Trail	Bet Douglas St and Carney St	Tonawanda	trail	2019	407		23%	0%	0%	0%	43	

Appendix A: Bicycle and Pedestrian Count Tables

ID	Location	Where	Municipality	Existing bike facility	Year	Bike EDT - (week-day)	Bike EDT (week-end)	% female (week-day)	% child (week-day)	% sidewalk riding (week-day)	% wrong way riding (week-day)	Ped EDT (week-day)	Ped EDT (week-end)
31	NF State Park South	near Old Stone Chimney	Niagara Falls	trail	2019	36						0	
32	Devil's Hole Gateway	S of Devil's Hole State Park Parking Area	Niagara Falls	trail	2019	7						79	
33	N 2nd St, Lewiston	N of Oneida St	Lewiston	none	2019	29				25%	0%	50	
34	William St	W of Pine St	Buffalo	bike lane	2019	136				26%	21%	200	
35	Main St	S of Scajaquada Expy	Buffalo	none	2019	200	118	14%	0%	29%	21%	414	200
36	Niagara Scenic Parkway Trail	N of Mohawk	Lewiston	trail	2019	29						0	
37	Clarence bike path	Clarence Center	Clarence Center	trail	2019	286		33%	0%			121	
38	Canalway Trail and Tonawanda Creek Rd	W of Creekside Assembly of God	Amherst	trail	2019	100				50%	7%	50	
39	Strawn Avenue Cheektowaga	~50 ft from trail entrance	Cheektowaga	trail	2019	36				0%	80%	36	
40	Two Mile Creek Trail	S of Niagara St	Tonawanda	trail	2019	36						157	
41	Main St	N of Virginia St	Buffalo	none	2019	171		17%	0%	38%	4%	779	
42	Tonawanda Rail Trail	N of Englewood Ave	Tonawanda	trail	2019	250	424	34%	17%			207	335

Appendix A: Bicycle and Pedestrian Count Tables

Appendix B: Tonawanda Rail Trail 48-hour Camera Data

We were fortunate to gain access to a COUNTcam2 traffic recorder which was mounted on a traffic signal on the Tonawanda Rail Trail south of Sheridan Drive (count site 24). This device recorded video from 9 am on September 10 through 6 am on Thursday, September 12, and again on Saturday, September 14 through Sunday, September 15. GObike viewed this footage to determine actual bicycle and pedestrian volumes for these time periods.

Table 1 shows raw bicycle and pedestrian counts as captured by the COUNTcam2 on the three weekdays of interest. For the hours where we had two day's worth of data, we averaged those two numbers.

Raw Bike Counts - Tonawanda Rail Trail, south of Sheridan Dr					Raw Ped Counts - Tonawanda Rail Trail, south of Sheridan Dr				
	10-Sep	11-Sep	12-Sep			10-Sep	11-Sep	12-Sep	
Time	Bikes	Bikes	Bikes	Avg	Time	Peds	Peds	Peds	Avg
0:00		0	0	0	0:00		0	0	0
1:00		0	0	0	1:00		0	0	0
2:00		0	0	0	2:00		0	0	0
3:00		0	0	0	3:00		0	0	0
4:00		0	0	0	4:00		0	0	0
5:00		1	1	1	5:00		0	0	0
6:00		2		2	6:00		0		0
7:00		11		11	7:00		2		2
8:00		17		17	8:00		6		6
9:00	20	14		17	9:00	8	9		9
10:00	30	6		18	10:00	17	5		11
11:00	15	16		16	11:00	4	3		4
12:00	17	12		15	12:00	7	2		5
13:00	36	15		26	13:00	4	1		3
14:00	17	17		17	14:00	3	5		4
15:00	37	18		28	15:00	1	4		3
16:00	27	23		25	16:00	4	1		3
17:00	40	35		38	17:00	6	5		6
18:00	48	65		57	18:00	17	9		13

19:00	37	63		50	19:00	7	13		10
20:00	9	14		12	20:00	2	1		2
21:00	4	0		2	21:00	0	1		1
22:00	1	0			22:00	0	1		1
23:00	0	3			23:00	1	1		1

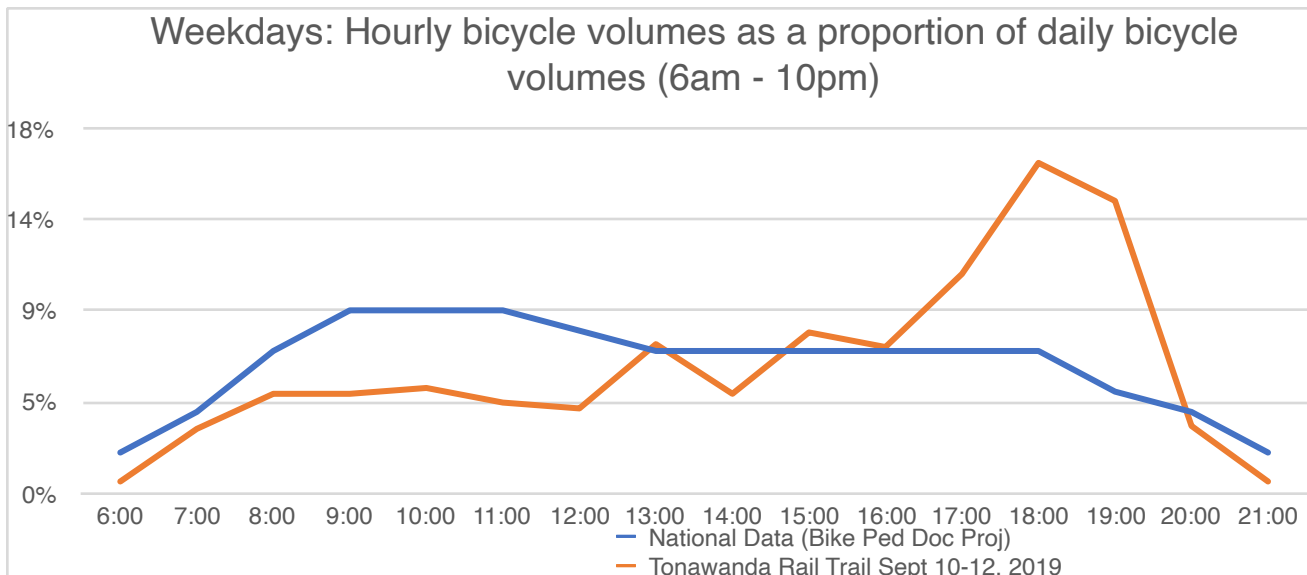
Table 2 shows raw bicycle and pedestrian counts as captured by the COUNTcam2 on the weekend of interest. For the hours where we had two day's worth of data, we averaged those two numbers.

Raw Bike Counts - Tonawanda Rail Trail, south of Sheridan Dr					Raw Ped Counts - Tonawanda Rail Trail, south of Sheridan Dr				
	Fri 9/13	Sat 9/14	Sun 9/15			Fri 9/13	Sat 9/14	Sun 9/15	
Time	Bikes	Bikes	Bikes	Avg	Time	Peds	Peds	Peds	AVG
0:00		1	3	2	0:00		0	0	0
1:00		0	1	1	1:00		0	0	0
2:00		0	0	0	2:00		0	0	0
3:00		0	0	0	3:00		0	0	0
4:00		0	0	0	4:00		0	0	0
5:00		1	1	1	5:00		1	0	1
6:00		0	3	2	6:00		2	5	4
7:00		5	18	12	7:00		3	2	3
8:00		17	19	18	8:00		11	26	19
9:00		35	46	41	9:00		15	15	15
10:00		36	38	37	10:00		13	11	12
11:00		55	61	58	11:00		14	5	10
12:00		42	48	45	12:00		5	19	12
13:00	12	37		37	13:00	8	7		7
14:00	11	27		27	14:00	1	17		17
15:00	20	43		43	15:00	1	17		17
16:00	26	36		36	16:00	2	12		12

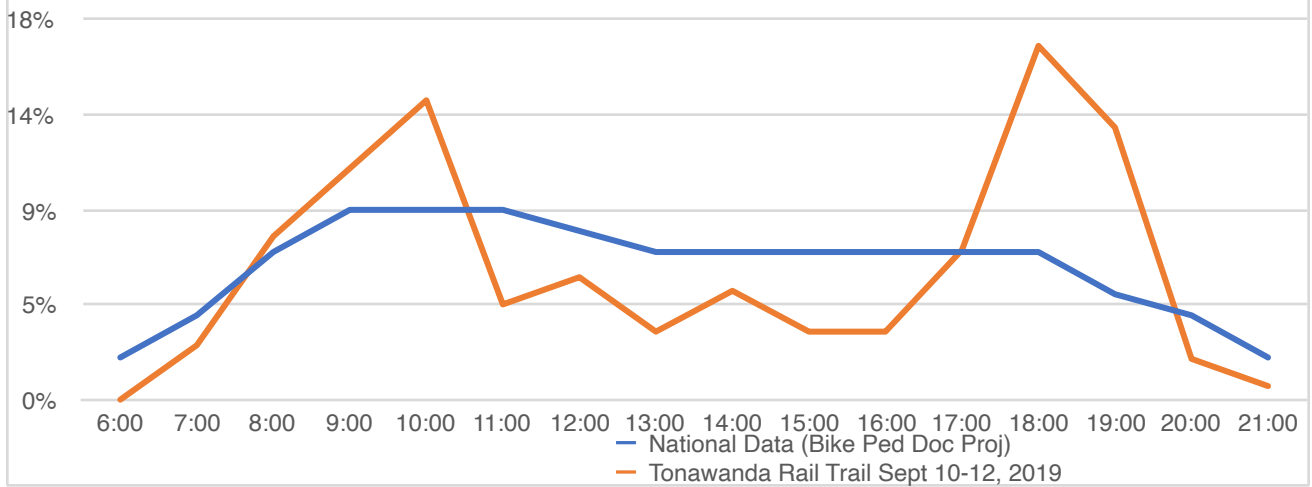
17:00	29	52		52	17:00	8	2		2
18:00	40	30		30	18:00	7	10		10
19:00	27	17		17	19:00	13	13		13
20:00	14	17		17	20:00	6	0		0
21:00	3	5		5	21:00	0	2		2
22:00	3	8		8	22:00	0	0		0
23:00	0	3		3	23:00	0	4		4

In addition to providing actual volumes for this location (rather than EDT based on two-hour counts) this data provides the opportunity to compare the extrapolation factors provided by the National Bicycle and Pedestrian Documentation Project with some local data. According to data from the National Bicycle and Pedestrian Documentation Project, based on counts across the country, in "long winter, short summer" climate zones, peak hour travel (4 to 6 pm in this region) accounts for 14% of daily non-motorized traffic on weekdays. On weekends, peak hour travel (12-2pm) accounts for 17% of daily non-motorized travel.

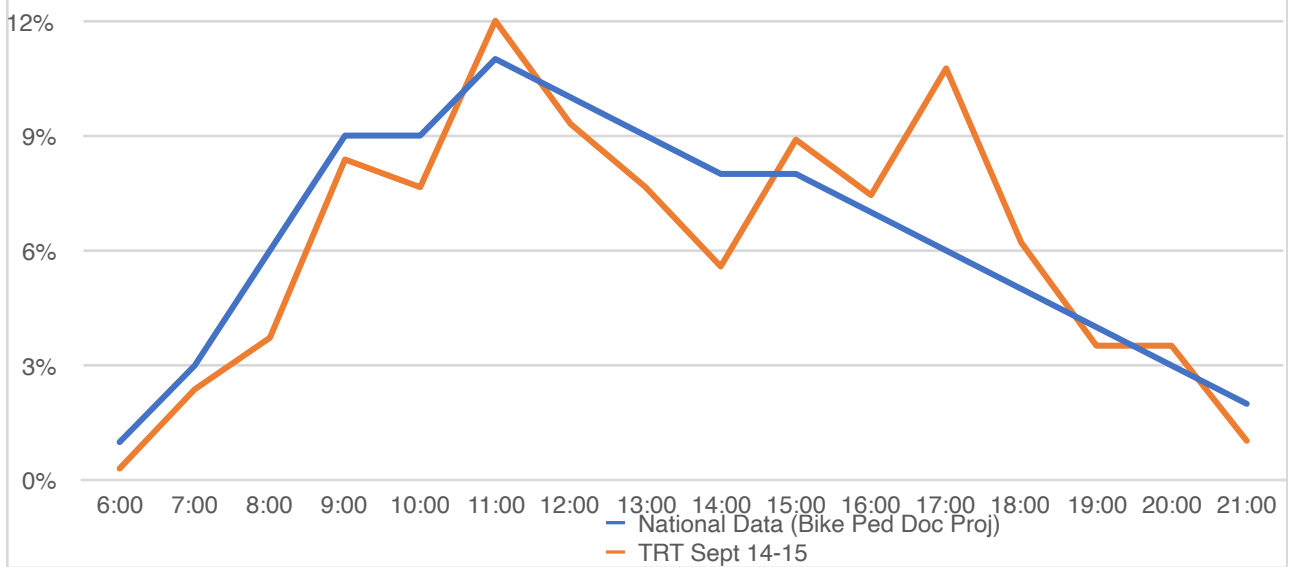
In the graphs below, we compare the percentage of daily bicycle and pedestrian traffic that occurs each hour on the Tonawanda Rail Trail as compared to the national data:

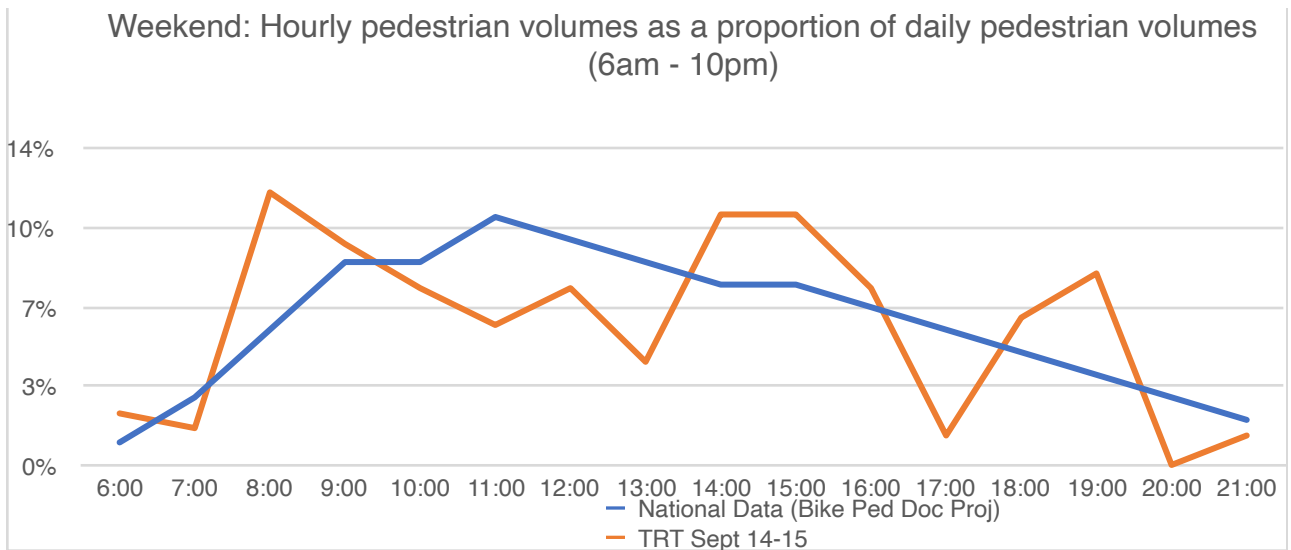


Weekdays: Hourly pedestrian volumes as a proportion of daily pedestrian volumes (6am - 10pm)



Weekend: Hourly bicycle volumes as a proportion of daily bicycle volumes (6am - 10pm)





Note that on weekdays, our local bicycle data shows a more dramatic PM peak than the national data, and the pedestrian data displays a significant peak both in the AM and PM. While local data more closely follows national data on the weekends, we again see a stronger PM peak in the Tonawanda Rail Trail data than the national data. This is partly because there are strong peaks in usage of the Tonawanda Rail Trail, as it is highly utilized by both commuters and recreational users. Another contributing factor is that we only have 48 hours of data on the Tonawanda Rail Trail, while the national data looks smoother because it is an average of a large data set.

The stronger peaking action on the Tonawanda Rail Trail means that our EDT estimates based on the two-hour counts are likely an overestimate of actual weekday traffic in this location. However, the Tonawanda Rail Trail is a very unique trail in this region. It is the Buffalo-Niagara region's highest quality urban trail, surrounded by housing on all sides, with a high level of both recreational and utilitarian usage. Continuous count data is needed in more locations to determine if it displays a pattern that is representative of other regional locations. In particular, on street locations are likely to have a significantly different hourly pattern.

Due to the reasons outlined above, we relied on the national data for extrapolation purposes rather than using Tonawanda Rail Trail data.

Appendix C: Example Count Sheet and Screenline



Bicycle and Pedestrian Count Form – September 2019

Name:					Date:				
Location:					Weather:				
Time period	Bicyclists					Pedestrians			
	Male	Female	Child	Sidewalk Riding	Wrong Way Riding	Male	Female	Child	Asst
12:00–12:15									
12:15-12:30									
12:30-12:45									
12:45-1:00									
1:00-1:15									
1:15-1:30									
1:30-1:45									
1:45-2:00									

Are there any special conditions (potholes, illegally parked vehicles, construction, vehicle crash, police activity, etc) that may impact this count?

Appendix C: Example Count Sheet and Screenline



Bicycle and Pedestrian Count Instructions

Plan to arrive at your count location at least 10 minutes in advance to get organized.

At the count location:

- Find a safe location where you can see your entire screen line. Get comfortable and prepare to sit or stand at that location for 2 hours. Try not to block the sidewalk.
- Make a note of weather conditions, including the temperature, if known.
- Note any conditions on the roadway or sidewalk that may impact bike/ped travel.

Counting:

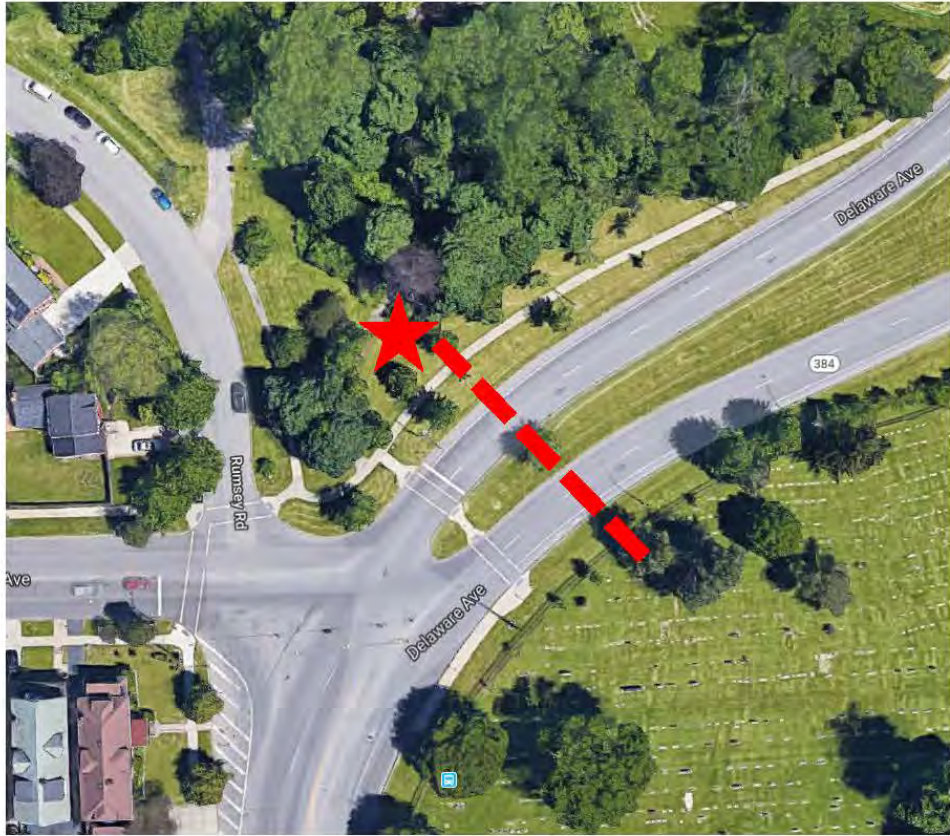
- Your goal is to record every person biking or walking **each time they cross the screen line**.
- When a person passes the screen line, place one tally in the appropriate box (bicyclist-male, bicyclist-female, pedestrian-male, or pedestrian-female).
 - If gender is not clear, default to male and make a note at the bottom for the number of uncertain gender occurrences.
- Record **an additional tally** for other attributes in the grey columns as follows:
 - **Child** – record an additional mark for any individual appearing to be under 16 years of age (use your best judgment)
 - **Sidewalk riding** – record an additional mark for each person riding on the sidewalk on either side of the street
 - **Wrong way riding** – record an additional mark for each person riding the wrong way (against traffic) in the street. Don't worry about which direction people are riding on the sidewalk. Do not count people riding in a contraflow bike lane (eg. Linwood Ave) as riding the wrong way - they are using the facility as designed.
 - **Asst** – record an additional mark for individuals using any kind of assistive devices such as walkers, canes, wheelchairs, crutches, skateboards, roller blades, or being carried by another pedestrian (such as a small child in a backpack)

Note: You are counting people, not bikes. This means that a tandem bike with 2 riders counts as 2. If an adult is riding with a child in a child seat, that count as 2. If someone is pushing a friend in a wheelchair, that is 2.

Return completed forms to Thea Hassan by snapping a photo and emailing to thea@gobikebuffalo.org, or mail them to:

Go Bike Buffalo
Attn: bike ped count sheet
640 Ellicott Street, Suite 447
Buffalo, NY 14203

Location 18: Delaware, North of Rumsey



Counter stands here



Screenline location

Description: The screenline covers all of Delaware Ave - both directions, including the sidewalk along Delaware.

Station yourself as best you can to have a sightline all the way across.

If anyone is biking on the center median, tally that as sidewalk riding.



Photo facing north